# V. FEP WORK PLAN 2000-2001

In the fiscal year 2000-2001 the Agency's FEP funded 13 projects at a cost of $155,000. In addition to granting FEP funds to organizations throughout the Russian River watershed, the Agency conducted seven research and restoration projects using internal staff and funding. These internal efforts focused on restoring degraded habitats, developing best management practices at Agency facilities, and assisting other resource agencies in the watershed. The locations of FEP projects are shown on Figure 1. Projects sponsored by FEP during this year are discussed below and are grouped by FEP grant projects funded to organizations and Agency-initiated projects. The information provided for each project includes a brief project description and project status.

## FEP GRANTS

### 1. PALMER CREEK ROAD SEDIMENT REDUCTION

The Palmer Creek Road Sediment Reduction project reduced delivery of fine sediment to Palmer and Mill Creeks by implementing erosion control and storm proofing treatments at 27 sites along 2.5 miles of Palmer Creek Road. The sites were identified during a road assessment that was conducted in 1997. The project reshaped, graded and curved run-off ditches in the existing roadway, and resurfaced the road with high quality blue shale. Other tasks included culvert repair and placement to facilitate erosion control, construction of rolling dips to enhance road drainage, improvement of roadside slopes, elimination of graded berms, improvement of the inboard ditch, and construction of stilling basins at culvert outfalls. A 1997-1998 FEP grant funded implementation of similar improvements on the lower section of the road. Sotoyome RCD and Palmer Creek Fire Association implemented this project and the Agency contributed $23,000 in matching funds.

**Rolling dips along Palmer Creek Road**

**Status:** Palmer Creek Road Sediment Reduction Project was completed in fall 2001. Approximately 34 rolling dips were installed, as well as other road improvements, to reduce erosion.

### 2. GOLD RIDGE STEWARDSHIP PROGRAM

**Description:** The Gold Ridge Stewardship Program enhances fisheries habitat and water quality through coordination of watershed restoration and stewardship efforts. The Gold Ridge RCD promotes the formation of watershed groups for community members through education, outreach, and identifying priority watershed issues. The Agency provided $8,842 in matching and in-kind funds.

**Status:** The stewardship program in 2000-2001 published two newsletters and hosted a rural roads workshop. The Gold Ridge RCD newsletters were sent to local residences within the

district and provided information on local restoration projects, upcoming watershed restoration and stewardship events, and how to participate in local watershed groups. The rural roads workshop was presented by Pacific Coast Watershed Associates and discussed proper installation and maintenance of private dirt roads to minimize erosion and runoff into streams.

### 3. GOLD RIDGE CREEK CLEAN-UPS

**Description:** The purpose of Gold Ridge Creek Clean-ups is to minimize pollution and obstructions to fish passage, improve creek aesthetics, and distribute educational materials. The Gold Ridge RCD organized creek clean-ups in the Green Valley and Dutch Bill Creek watersheds with local watershed groups, schools, and other local groups and agencies. The clean-ups are supplemented by the distribution of educational materials to landowners regarding the impacts of pollution on fisheries and water quality. The Agency provided $5,445 in matching and in-kind funds.

**Status:** The Gold Ridge RCD organized creek clean-ups at Harrison Creek along Harrison Grade Road and Atascadero Creek near Graton. Approximately 50 local volunteers removed debris from these creeks, including three large dumpster loads of trash, 150 tires, 12 car batteries, several car motors, and one car body. This effort to remove large items was impressive given the steep canyon terrain along Harrison Creek.

### 4. RUSSIAN RIVER CLEAN-UP

**Description:** For the past twelve years, the Sequoia Paddling Club has spearheaded the Russian River Clean-up project, which annually removes enormous quantities of debris and garbage. The Russian River receives tremendous visitor use during the summer months and is subject to litter and debris accumulation. The event has drawn several hundred volunteers in recent years and covers 53 miles of the river between Cloverdale and Jenner. This event has grown to the point where the Sequoia Paddling Club decided to make the Russian River Clean-up a stand-alone organization. The budgeted cost for labor and transportation to the Agency was $8,500.

**Status:** Over 250 volunteers in canoes, kayaks, and on foot were able to collect an enormous amount of garbage during the Russian River Clean-up event in 2000. Crews worked along the Russian River from Asti to Monti Rio, Fife Creek, Hurlbut Creek, Dutch Bill Creek, and Mark West Creek. Trash removed included 6,300 lbs from the Guerneville area and 35 cubic yards from the Healdsburg area. Recovered recyclable materials included 3,100 lbs of metal, 2,175 lbs of glass, 71 lbs of aluminum, 81 lbs of plastic, and 150 tires. The most unusual trash items were a burnt out sailboat and half a surfboard.

**Johnson Beach, Russian River**

## 5. LYTTON CREEK RIPARIAN RESTORATION AND EDUCATION

**Description:** The Lytton Creek Riparian Restoration and Education project restored 15 acres of native riparian habitat along a salmonid bearing tributary to the Russian River. Also, the project included an environmental education program that incorporated high school students, landowners, and the community in the planning, design, implementation, and monitoring of the project. CRP and Clos du Bois winery implemented the project and the Agency provided $27,936 in matching and in-kind funds.

**Status:** This restoration project included the restoration of a degraded riparian zone and the conversion of four acres of vineyard back to riparian. During the winter and spring 2001, 1,200 plants were installed with a 90 percent survival rate in early July of the same year. Restoration effects will be monitored for a five-year period. This project provided an important opportunity to demonstrate that healthy natural ecosystems can coexist with viable farming practices.

**Volunteers install plantings**

## 6. MUMFORD DAM FISH PASSAGE AND RIPARIAN RESTORATION

**Description:** This project will improve fish passage over the Mumford Dam, and improve streambank stability and riparian habitat near the dam. The Mumford Dam is a medium-size diversion dam (approximately 60 wide and 8 feet high) located on the west branch of the Russian River near the town of Redwood Valley. The dam is used to divert flows for vineyard irrigation and frost protection. Since its construction in the early 1900s, the streambed below the dam has down cut between 8-15 feet. This severe down cutting has virtually eliminated fish passage over the structure, restricting access to approximately 50 miles of spawning habitat. In addition, the down cutting has caused massive erosion and bank failure for approximately 600 feet below the dam. The project will involve recontouring the streambanks to a more stabile profile, constructing a series of weirs to facilitate fish passage, and revegetation with native plants. The dam owner will also be upgrading the diversion facilities to be compliant with NMFS fish screening criteria. The Agency's 2000-2001 funding assisted with design and permitting expenses at a budgeted cost of $60,000.

**Mumford dam obstructs fish passage**

**Status:** The Agency assisted the Simon Partnership (landowners) with engineering design plans. Also, the Agency conducted botanical, fish, and wildlife surveys needed for the environmental

permitting and is in the process of acquiring needed permits. Construction of the project is scheduled for summer 2002 and revegetation in fall 2002.

### 7. GREEN VALLEY CREEK RESTORATION (SITE 1)

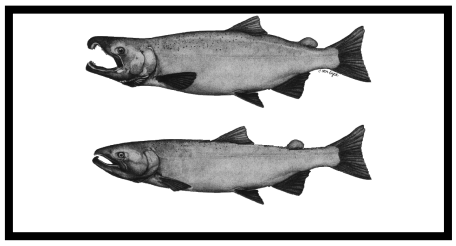
**Description:** The purpose of the Green Valley Creek Restoration (Site 1) project is to increase the amount of pool habitat in the creek by installing large woody debris habitat structures. This creek is one of the few tributaries in the Russian River watershed that still supports a self-sustaining, although diminished, population of threatened coho salmon. Surveys conducted by the CDFG have shown that Green Valley Creek lacks pool habitat and cover. Pools with heavy cover are of particular importance for successful rearing of juvenile coho salmon. Dragonfly Stream Enhancement implemented this project with partial funding from the Agency at a cost to the Agency of $1,465.

**Enhanced pool with coho salmon and California freshwater shrimp**

**Status:** This restoration project was completed in fall 2000 and consisted of installing four instream log structures to provide cover and pool habitat for salmonids. These structures were in good condition after the winter floodwaters and a CDFG biologist observed coho salmon at the enhanced pool. Also, the endangered California freshwater shrimp occurs at the pool.

### 8. GREEN VALLEY CREEK RESTORATION (SITE 2)

**Description:** The Green Valley Creek Restoration (Site 2) project reduced input of fine sediment into Green Valley Creek and improved spawning and rearing habitat for salmonids, including steelhead and coho salmon. Due to an eroding bank, this site was contributing excessive sediment to the creek each year. Dragonfly Stream Enhancement implemented this project with partial funding from the Agency at a cost to the Agency of $1,610.



**Adult Coho Salmon**

**Status:** This restoration project was completed in fall 2000 and consisted of stabilizing and restoring 30 feet of eroding stream bank along Green Valley Creek. The project included recontouring the eroded bank, installing a willow mattress, and planting 35 native riparian trees.

### 9. GREEN VALLEY CREEK RESTORATION (SITE 3)

**Description:** The Green Valley Creek Restoration (Site 3) project reduced input of fine sediment into Green Valley Creek. The project improved spawning and rearing habitat by

reducing the amount of fine sediment entering Green Valley Creek. Dragonfly Stream Enhancement implemented this project with partial funding from the Agency at a cost to the Agency of $1,370.

**Status:** This enhancement project reduced sediment into Green Valley Creek by stabilizing an eroding creek bank degraded by runoff from a drainage swale. A small berm was constructed at the base of the swale and the bank was recontoured to stabilize the soil. Approximately five native riparian plants will be planted in fall 2001. Also, two wood structures were installed in the creek to enhance pool habitat for salmonids.

## 10. HOOD MOUNTAIN FISH PASSAGE

**Description:** The Hood Mountain Fish Passage project improved fish passage along Santa Rosa Creek at a rural road stream crossing. Agency staff identified this road crossing as a fish passage problem during stream surveys conducted in 1997. The road crossing consists of an old concrete sill and roadway that allows access from Hood Mountain Regional Park to the McCormick Sanctuary. The streambed below the road crossing has down cut approximately 3 feet. This down cutting, combined with sheet flow across the roadway, severely limits fish passage at the crossing. Dragonfly Stream Enhancement implemented the project with a $7,685 FEP grant from the Agency.

**Creek crossing with rock baffles**

**Status:** This project was constructed in fall 2001 and consisted of lowering the concrete road crossing and sloping the downstream side of the sill to reduce the jump height for fish. In addition, rock baffles were installed on the downstream side of the sill to improve fish passage by varying flow velocities over the sill and increasing water depth on the roadway.

## 11. DUTCH BILL CREEK RESTORATION

**Description:** The Dutch Bill Creek Restoration project increased the amount of pools and cover habitat in Dutch Bill Creek by installing seven complex habitat structures. Dutch Bill Creek supports a relatively healthy steelhead fishery and is believed to be one of the few tributaries that still support coho salmon. Surveys conducted by CDFG have shown that Dutch Bill Creek lacks pool habitat and cover. Pools with heavy cover are of particular importance for successful rearing of juvenile coho salmon. Dragonfly Stream Enhancement implemented the project with partial funding from the Agency at a cost of $1,992 to the Agency.

**Large woody debris structure enhances pool habitat for salmonids**

**Status:** This project included the installation of large woody debris structures comprised of redwood logs and rootwads at six pools along Dutch Bill Creek. These structures were installed in the fall 2000 and were functioning as designed after one winter.

## 12. CONTINGENCY FUND

**Description:** The Contingency Fund provides a source of expertise and materials for smaller projects that are not included in the current FEP. There are a large variety of small non-profit groups implementing effective fishery restoration projects in Sonoma County. The projects conducted by these groups are often on a relatively short time frame and their plans have not been finalized prior to the completion of the Agency's annual FEP Work Plan. This fund allows the Agency to provide assistance to such organizations as school programs and local environmental groups during the 2000-2001 fiscal year. The cost of most contingency fund projects is low.

**Teacher discusses steelhead lifecycle to students**

**Status:** Steelhead in the classroom: The Agency provided $4,535 to fund a five-year program to teach elementary students about steelhead lifecycle and habitat needs. This program involves three 5th grade classes at John Reed Elementary School and includes raising steelhead in the classroom, releasing reared fish into Dry Creek, and touring Warm Springs Dam and Don Clausen Hatchery. The first of five years of this program were completed in spring 2001.

## FEP AGENCY PROJECTS

## 13. TEMPERATURE COLLECTION

**Description:** Stream temperature data is important in determining which streams are within the temperature range suitable for salmonid spawning and juvenile rearing. This project is conducted in collaboration with CDFG and Mendocino County Water Agency. Because environmental conditions vary annually, an accurate depiction of stream temperature requires data collection in multiple years. Data loggers are deployed each year during the spring and are recovered in the fall. Temperature data loggers have been placed annually in streams prioritized by CDFG since 1996. The Mendocino County Water Agency compiles all temperature data collected by the different agencies into a single database.

**Status:** Agency staff is currently analyzing data from temperature loggers collected in the fall 2000. In spring 2001, Agency staff installed approximately 50 water temperature data loggers throughout the Russian River watershed. Also, the Agency has been involved in a series of "temperature summit" meetings sponsored by the North Coast Regional Water Quality Control Board to coordinate all of the water temperature monitoring efforts in the watershed.

## 14. BIG AUSTIN CREEK RESTORATION

**Description:** The purpose of the Big Austin Creek Restoration project is to restore salmonid habitat that has been degraded by historic mining upstream of the site. The project includes reconstructing 1,300 feet of degraded channel by stabilizing the banks and planting riparian vegetation. This project is in its fourth year of implementation. Beginning in 1997 a hydrological study of the site was completed. Then in 1998 and 1999 restoration work included bank stabilization, placement of instream cover, construction of willow baffles and willow walls, and riparian vegetation planting.

**Willow baffles two years after installation**

**Status:** The installation of a single weir was proposed for the 2000-2001 work plan to reduce erosion; however, the site appears to have naturally stabilized and the weir is not necessary. Restoration of the site is now considered complete. Monitoring of the restoration benefits will continue for another two years.

## 15. COPELAND CREEK RESTORATION

**Description:** The purpose of the Copeland Creek Restoration project is to restore riparian and salmonid habitat along approximately 6,000 feet of Copeland Creek between Roberts/Pressley Road and Petaluma Hill Road, located east of Sonoma State University. Grazing pressure has limited vegetation establishment primarily to non-native grasses and forbs, a stand of non-native eucalyptus, and a few oaks and other native trees. Restoration of this section of creek will stabilize banks, decrease creek sediment load, and improve habitat for steelhead (as well as other native fish and wildlife). The project involves constructing cattle exclosure and other types of fencing, recontouring heavily eroded creek banks, and revegetating with native riparian species. This project began in 1999 and will be completed in phases over a 3-4 year period.

**Vole trapped during wildlife monitoring**

**Status:** The second phase of the project was completed in summer and fall 2000. This phase included restoring the middle section of the site. Approximately 1,000 feet of stream was recontoured to stabilize eroding creek banks. Willow baffles (i.e., rows of living willow sprigs) and boulders were placed along the base of some banks for further stabilization. The upper banks were protected with erosion control matting and revegetated. Approximately 3,000 native riparian plants were planted along 4,000 feet of creek. Eight piezometers (i.e., shallow wells) were installed along the creek to monitor fluctuations in groundwater levels. Monitoring of fish, wildlife, and their habitats

began in winter 2001 and will continue for at least five years. Monitoring data will be compared with future monitoring years to evaluate the benefits of restoration activities. Restoration of the remaining 1,000 feet of degraded creek will be completed in 2001-2003.

## 16. MIRABEL INFLATABLE DAM / WOHLER POOL FISH-SAMPLING PROGRAM

**Description:** The Mirabel Inflatable Dam impounds the Russian River and forms the three-mile-long Wohler Pool. The inflatable dam is operated in the summer when municipal water use is highest and deflated in the winter when no longer needed to meet demand. Within the impounded reach, water depth is increased and current velocity is decreased. These changes in the natural hydrology of the river may potentially alter fish species composition, distribution, and abundance. The Agency is studying the effects of the inflatable dam operation on the life history of steelhead, coho, and chinook salmon.

**Status:** This is the second year of implementing this program. The first year of the program focused on developing and evaluating fish and water quality sampling techniques to study salmonids in the Wohler Pool area. Studies in 2000-2001 included water temperature monitoring, salmonid smolt emigration, fish species abundance, fish radio telemetry, and video monitoring at fish ladders. The following is a summary of the program studies:

**Chinook salmon smolt**

Water Quality: Water temperature data is collected using data loggers at the Wohler Pool and other sites along the Russian River. Water temperature profiles were also recorded at several locations within and above the pool. These data are used to characterize water conditions in the vicinity of the Agency's facilities and to evaluate salmonid habitat.

Smolt Emigration: Rotary screw traps are used in the spring to capture salmonids migrating downstream. Two traps are positioned below the Agency's inflatable dam and fish ladders. Trapping information is used to evaluate the out migration timing of smolts and to determine the successful downstream migration of salmonids passing the dam. Both steelhead smolt and chinook salmon smolt where captured in spring 2001.

**Netting fish during Wohler Pool survey**

Wohler Pool Fish Community: This project surveys fish species and abundance above and below the inflatable dam, including the Wohler Pool. These surveys are used to evaluate the number and size of fish that may be predators on young salmonids as they migrate downstream. Also, the predator composition and abundance in the Wohler Pool is compared with other sites in the Russian River.

Fish Radio Telemetry: A radio telemetry study is being conducted to evaluate the migration movement of steelhead through the Wohler Pool and inflatable dam area. Hatchery grown steelhead smolts are implanted with peanut-sized radio transmitters, released into the Russian River, and then their movements are tracked for several weeks as they migrate.

Video Monitoring: This study evaluates the effectiveness of the two fish ladders located at the inflatable dam. Underwater video cameras at the upper entrance of the ladders continuously record fish movement. Based on the results of the video monitoring, chinook salmon and steelhead ascend the ladders in large numbers. Chinook were positively identified using the video cameras and adults were filmed migrating above the inflatable dam. Due to low flow conditions in the Russian River, the Agency was able to monitor the entire fall chinook salmon run for the first time in 2000. The run appeared to be far greater than previously thought, with an estimated 1,500 adults migrating above the inflatable dam.

## 17. RUSSIAN RIVER BASIN COHO AND STEELHEAD POPULATION MONITORING

**Description:** In conjunction with CDFG and NMFS, the Agency began developing a Russian River basin-wide monitoring program in 1999 to determine long-term trends in salmonid abundance. Coho salmon and steelhead populations in the Russian River basin have decreased dramatically over the last 100 years. However, comprehensive surveys have never been conducted making it difficult to document the decline or accurately track recent population trends. Streams throughout the Russian River watershed are sampled annually using a variety of methods including direct observation (snorkeling), trapping, and electrofishing. The program will evaluate all salmonid life stages (e.g. juveniles, smolts, and adults); however, the Agency will focus primarily on obtaining population estimates for juveniles during late summer and fall. After developing a study plan, survey methods at selected sample sites will be field tested for two years before adopting a final plan.

**Status:** During the second year of this project electrofishing and/or snorkel surveys were conducted in three tributaries of the Russian River, including 68 sites in Santa Rosa Creek, 66 sites in Mark West Creek, 20 sites in Millington Creek, and 122 sites in Sheephouse Creek. Steelhead were found in all four creeks; however, coho salmon were not found in any of the surveyed areas. The pilot fish surveys conducted in the first two years of the study were used to develop and refine sampling protocols. These protocols will be used for this project as well as other FEP projects requiring fish surveys. The focus of this project is currently being reevaluated and the objectives of future population studies will likely change to meet the needs of the Agency and cooperating entities.

**Juvenile Steelhead**

## 18. RUSSIAN RIVER ESTUARY MONITORING PROGRAM

**Description:** The Russian River Estuary Management Plan was developed to monitor the effects of breaching the mouth of the Russian River located near Jenner. The sandbar at the mouth of the Russian River estuary has been artificially breached to prevent flooding since 1968. Artificial breaching changes water quality and may negatively impact fish and wildlife. In 1992 and 1993, Sonoma County and the California Coastal Conservancy conducted a study to identify the adverse effects of breaching. The study included monitoring the effects of river mouth breaching on water quality, invertebrates, fishes, and harbor seals. Water quality was monitored continuously and fish and invertebrates were sampled immediately before and after breaching events throughout the summer. Continuous water quality data was collected using automated samplers and data loggers. Fish and invertebrates were sampled using beach seines and bottom trawls. In addition, the abundance and behavior of harbor seals at the mouth of the estuary were monitored.

**Russian River mouth and estuary**

**Status:** The *Biological and Water Quality Monitoring on the Russian River Estuary, 2000, Fifth Annual Report* summarized the results of the five-year study to evaluate sandbar-breaching effects at the Russian River mouth. The study determined that the present program of artificial breaching of the estuary has no apparent negative impact on the aquatic habitat of fish and seals. The inhabitants of the estuary are adapted to an environment that naturally alternates between tidal estuary and coastal lagoon.

## 19. FISH RESCUE ACTIVITIES

**Description:** Concerned about the survival of threatened steelhead, coho, and chinook salmon, the Agency performs annual fish rescue operations to remove fish from the Agency's infiltration ponds. As part of its water supply and transmission system, the Agency operates eight infiltration ponds adjacent to the Russian River at the Mirabel and Wohler collection facilities. During flood events, river water floods the levees around the ponds. Fish that enter during floods become trapped when the water recedes. When water levels recede enough to allow for safe access and efficient capture, FEP staff use beach seines repeatedly to capture all fish in the ponds. The fish are identified, counted, and released immediately into the Russian River. Also, the Agency has made several modifications to improve fish rescues, including construction of deep-water refugia in infiltration ponds to reduce stress and predation of impounded fish, and installation of new

**Fish rescue at Wohler Pond**

fish screens and culverts at Wohler Pond to minimize fish entrapment.

**Status:** Fish rescue efforts at the Wohler infiltration ponds occurred on six occasions in 2000-2001. Fish were rescued following flood events in March that resulted in overtopping of levees at the ponds and then in June and October due to vandalized fish screens that resulted in fish access to the ponds. Approximately 632 fish were captured during fish rescue efforts. Of these fish, 546 (86 percent) were non-salmonid fish species and 86 (14 percent) were salmonids. Salmonids included 68 wild steelhead juveniles and smolts, 9 hatchery steelhead smolts, and 9 chinook smolts. There were two mortalities: one wild juvenile steelhead and one juvenile chinook. Rescued fish were immediately released back to the Russian River.